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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/509,649	03/30/2000	ROBERT ARTHUR LEE	CU-2137TFP	7785

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EXAMINER

CHANG, AUDREY Y

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 03/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/509,649

Applicant(s)

LEE ET AL.

Examiner

Audrey Y. Chang

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 October 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Remark

- This Office Action is in response to applicant's amendment filed on October 9, 2002, which has been entered as paper number 18.
- By this amendment, the applicant has amended claims 19-27, 29, 30, 33 and 34.
- Claims 19-36 remain pending in this application.
- The rejections of claims under 35 USC 112, first paragraph, set forth in the previous Office Action dated June 12, 2002 *still hold*.

Response to Amendment

1. The amendment filed on October 9, 2002 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: *Claim 33 has been amended* to include the feature "a plurality of non-diffraction light scattering regions, each region having a number of *non-periodic* structures" which is not supported by the specification and is not adequately taught. *Claim 34 has been amended* to include the feature that the "printed graphic elements" being "continuous" with the "graphic elements formed by the gray scale regions". Such feature is not supported or explicitly taught in the specification.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it

Art Unit: 2872

pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. **Claims 19-23, 26, 28-32 and 35-36 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.**

Claim 19 has been amended to include the feature of “having a structure selected from predefined group of different non-diffracting gray scale region structure types, each structure type having physical characteristics which provide a particular level of diffuse scattering of incident light”. The specification **fails** to teach (1) **what** are these “non-diffracting gray scale region structure types”, (2) **what** specific structures are included in the “predefined group”, and (3) **what** are the “physical characteristics” that is capable of providing “a particular level of diffuse scattering of incident light”. **The specification fails** to teach the specific *working* examples or *operable* examples of such claimed functions which therefore **fails** to enable one skilled in the art to make and/or use the invention. *Claim 26 has been amended* to include the similar phrase “different non-diffracting gray scale region structure types” that is rejected for the same reasons stated above. Claims 20-23, 28-32, and 34-36 inherit the rejection from their respective base claims. Clarifications are required.

4. **Claims 33 and 34 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.**

The specification fails to teach adequately about the newly added feature “a plurality of non-diffraction light scattering regions, each region having a number of *non-periodic* structures” as recited in

Art Unit: 2872

the *amended claim 33*. Such non-periodic structures are never explicitly taught or disclosed in the specification.

Also the specification fails to teach adequately how do the “printed graphic elements” being “continuous” with the “graphic elements formed by the gray scale regions”, as recited in the *amended claim 34*.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. **Claims 21 and 34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Claim 21 has been amended to include the phrase “microscopic regions” that is indefinite since it lacks proper antecedent basis from its base claim.

Claim 34 has been amended to include the feature “graphic elements formed by the gray scale regions” that is confusing and indefinite since such “graphic elements” lack proper antecedent basis from its based claims 19 and 33. Also it is not clear how do the “printed graphic elements” being “continuous” with the “graphic elements formed by the gray scale regions”.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 19-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Lee (PN. 5,825,547), in view of patent issued to Boissier et al (PN. 4,790,566).

Lee teaches a *diffractive device*, having *surface relief structure*, that serves as the *device having surface relief structure*, wherein the diffractive device comprises a plurality of *tracks* that each of the tracks comprises diffraction grating grooves such that the diffraction gratings generates optically variable images when illuminated. Lee teaches that the diffracting tracks further comprise *diffusely reflecting regions* and *specularly reflecting regions in between* the diffracting regions wherein the diffusely reflecting regions are used to encode auxiliary information, (please see column 7, lines 39-45). These diffusely reflecting regions serve as the gray scale regions. Lee teaches that the diffracting tracks have a width less than 0.25 mm which therefore suggests that the diffusely reflecting regions also have a width less than 0.25 mm since these diffusely reflecting regions are **in between** the diffraction region of the track, (please see column 2, lines 21-29 and Figure 9). It is implicitly known in the art that diffusely reflecting regions are *non-diffraction regions* since diffusion phenomenon is different from diffraction phenomenon. Lee further teaches that graphical micro-writing (13, Figure 9, column 8, lines 15-34) may be embossed and formed in between the diffraction regions of the diffraction tracks, which correspond to the non-diffraction regions.

This reference has met all the limitations of the claims. It is known in the art that *graphical* micro-writing implicitly includes certain gray or color information. This reference however does not teach *explicitly* that the diffusely reflecting regions having the graphic micro-writing provide *different* level of disusing characteristic to the incident light. Boissier et al in the same field of endeavor teaches an identity document having graphical information printed on wherein the graphical information are printed by a network of micropixels each having a predetermined light absorption level or intensity level, wherein the absorption level and intensity level are selected from a plurality of gray levels or half tone

Art Unit: 2872

levels, (please see column 1, lines 15-20, and 41-62). It would then have been obvious to one skilled in the art to apply the teachings of Boissier et al to modify the diffusely reflecting non-diffraction regions of Lee to include graphic information micropixels having a plurality of gray levels or intensity levels for the benefit of adding additional security information to the diffractive device. The absorption effect of the incident light by the micropixels of Boissier et al reference is known in the art as result of the *scattering effect* of the incident light by the solid structure of the support in each of the micropixels. With regard to claim 33, Lee teaches that the micro-writings may contain non-periodic graphic liens and characters, (please see Figure 9).

With regard to claim 21, Lee teaches that the surface pattern of the diffractive device may have a surface area dimension of 30 micron by 30 micron, (please see column 6, lines 63-65).

With regard to claims 22-23, and 25, Lee and Boissier et al do not teach explicitly that the individual diffusely reflecting non-diffraction region comprises an identical or a different image. However such modification is considered to be an obvious matter of *design choice* to one skilled in the art for the benefit of having the degrees of freedom to print different types of graphical information for enhancing the ability of anti-forgery and the applications of the document.

With regard to claim 28, Lee teaches that the diffraction tracks having diffraction grating regions having relief grooves structure that each of the diffraction gratings generates an optical variable image upon illumination of light. Optical variable image means the image varied in response to the viewing direction and position of the observer.

With regard to claims 29 and 30, Lee teaches to include the above- mentioned diffusely reflecting regions and specularly reflecting regions, which have the ability of enhancing the contrast of the diffracted images stored in the diffraction tracks. It is known in the art that the non-diffraction regions interposed between the diffraction regions have the ability of enhancing the diffracted images of the diffraction regions.

Art Unit: 2872

With regard to claims 34-36, Lee teaches that the diffraction grating may be adapted for application as security devices for currency notes or credit card. The idea of matching the image presented by the diffraction grating and the currency note or credit card is *an obvious matter of design choice* to one skilled in the art since it involves only routine skill in the art and it has the advantages of serving the purpose of anti-forgery. The manners with respect to the actual inspection of the authentication of the security device having the diffraction gratings, recited in claims 35 and 36, do not differentiate the claimed device from prior art device satisfying the claimed structural limitations. Ex Parte Masham, 2 USPQ 2d 1647 (1987).

Response to Arguments

9. Applicant's arguments with respect to claims 19-36 have been considered but are moot in view of the new ground(s) of rejection.

10. The amendments the claims have been fully considered and the claims are rejected for the reasons stated above. Applicant's arguments are mainly concerned the amended features and they have been addressed in the paragraphs above.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US patent issued to **Jackson** et al (PN. 5,335,113) teaches the non-diffraction regions between diffraction regions enhance the contrast of the diffracted images.

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 2872

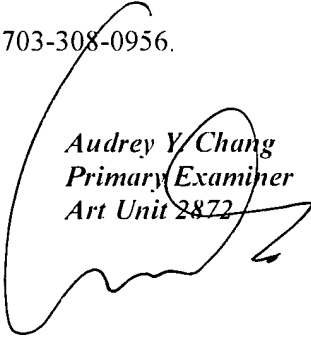
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1637. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Audrey Y. Chang
Primary Examiner
Art Unit 2872



A. Chang, Ph.D.
February 28, 2003